

WHAT IS CLAIMED IS:

1 1. A method for manufacturing a pre-cast polyacrylamide slab gel for use
2 in slab electrophoresis, said method comprising:

- 3 (a) placing a gel-forming liquid mixture inside a gel enclosure defined by a
4 pair of chemically inert, transparent plates separated from each other by fixed
5 distance, said gel-forming mixture comprising an acrylamide monomer, a crosslinking
6 agent, a buffer, and a nonionic amphiphilic polymer, in aqueous solution; and
7 (b) polymerizing said gel-forming mixture into a gel.
-

1 2. A method in accordance with claim 1 in which said nonionic
2 amphiphilic polymer has a molecular weight of from about 100,000 to about 8,000,000.

1 3. A method in accordance with claim 1 in which said nonionic
2 amphiphilic polymer has a molecular weight of from about 100,000 to about 5,000,000.

1 4. A method in accordance with claim 1 in which said nonionic
2 amphiphilic polymer has a molecular weight of from about 100,000 to about 1,000,000.

1 5. A method in accordance with claim 1 in which said nonionic
2 amphiphilic polymer has a molecular weight of about 100,000 or less.

1 6. A method in accordance with claim 1 in which said nonionic
2 amphiphilic polymer has a molecular weight of about 20,000 or less.

1 7. A method in accordance with claim 1 in which said nonionic
2 amphiphilic polymer is a member selected from the group consisting of poly(vinyl alcohol),
3 agarose, poly(vinyl pyrrolidone), poly(ethylene glycol), poly(ethylene oxide), poly(propylene
4 glycol), poly(propylene glycol)/ poly(ethylene glycol) copolymers, and linear
5 polyacrylamide.

1 8. A method in accordance with claim 1 in which said nonionic
2 amphiphilic polymer is poly(vinyl alcohol).

1 9. A method in accordance with claim 8 in which said poly(vinyl alcohol)
2 has a molecular weight of from about 200 to about 20,000.

1 **10.** A method in accordance with claim **8** in which said poly(vinyl alcohol)
2 comprises from about 0.5% to about 5% by weight of said aqueous solution.

1 **11.** A method in accordance with claim **1** in which said nonionic
2 amphiphilic polymer is poly(ethylene glycol) or poly(ethylene oxide).

1 **12.** A method in accordance with claim **11** in which said poly(ethylene
2 glycol) or poly(ethylene oxide) has a molecular weight of from about 100,000 to about
3 1,000,000.

1 **13.** A method in accordance with claim **11** in which said poly(ethylene
2 glycol) or poly(ethylene oxide) comprises from about 0.01% to about 0.3% by weight of said
3 aqueous solution.

1 **14.** A method in accordance with claim **1** in which said plates are glass.

1 **15.** A method in accordance with claim **1** in which said plates are plastic.

1 **16.** A method in accordance with claim **15** in which said plastic is a
2 member selected from the group consisting of polycarbonate, polystyrene, acrylic polymers,
3 styrene-acrylonitrile copolymer, acrylonitrile polymers, poly(ethylene terephthalate);
4 poly(ethylene terephthalate glycolate), and poly(ethylene naphthalenedicarboxylate).

1 **17.** A method in accordance with claim **15** in which said plastic is a
2 polystyrene-acrylonitrile blend.

1 **18.** A pre-cast polyacrylamide slab gel for use in slab gel electrophoresis,
2 said pre-cast slab gel comprising:
3 a pair of chemically inert, transparent plates, and
4 a polyacrylamide gel cast between said plates, said polyacrylamide gel formed
5 by polymerization of an acrylamide monomer and a crosslinking agent, said
6 polymerization having been performed in an aqueous solution comprising said
7 acrylamide monomer, said crosslinking agent, a buffer, and a nonionic amphiphilic
8 polymer.

1 **19.** A pre-cast polyacrylamide slab gel in accordance with claim **18** in
2 which said nonionic amphiphilic polymer has a molecular weight of from about 100,000 to
3 about 8,000,000.

1 **20.** A pre-cast polyacrylamide slab gel in accordance with claim **18** in
2 which said nonionic amphiphilic polymer has a molecular weight of from about 100,000 to
3 about 5,000,000.

1 **21.** A pre-cast polyacrylamide slab gel in accordance with claim **18** in
2 which said nonionic amphiphilic polymer has a molecular weight of from about 100,000 to
3 about 1,000,000.

1 **22.** A pre-cast polyacrylamide slab gel in accordance with claim **18** in
2 which said nonionic amphiphilic polymer has a molecular weight of about 20,000 or less.

1 **23.** A pre-cast polyacrylamide slab gel in accordance with claim **18** in
2 which said nonionic amphiphilic polymer is a member selected from the group consisting of
3 poly(vinyl alcohol), agarose, poly(vinyl pyrrolidone), poly(ethylene glycol), poly(ethylene
4 oxide), poly(propylene glycol), poly(propylene glycol)/ poly(ethylene glycol) copolymers,
5 and linear polyacrylamide.

1 **24.** A pre-cast polyacrylamide slab gel in accordance with claim **18** in
2 which said nonionic amphiphilic polymer is poly(vinyl alcohol).

1 **25.** A pre-cast polyacrylamide slab gel in accordance with claim **24** in
2 which poly(vinyl alcohol) has a molecular weight of from about 200 to about 20,000.

1 **26.** A pre-cast polyacrylamide slab gel in accordance with claim **24** in
2 which said poly(vinyl alcohol) comprises from about 0.5% to about 5% by weight of said
3 aqueous solution.

1 **27.** A pre-cast polyacrylamide slab gel in accordance with claim **18** in
2 which said nonionic amphiphilic polymer is poly(ethylene glycol) or poly(ethylene oxide).

1 **28.** A pre-cast polyacrylamide slab gel in accordance with claim **27** in
2 which said poly(ethylene glycol) or poly(ethylene oxide) has a molecular weight of from
3 about 100,000 to about 1,000,000.

1 **29.** A pre-cast polyacrylamide slab gel in accordance with claim **27** in
2 which said poly(ethylene glycol) or poly(ethylene oxide) comprises from about 0.01% to
3 about 0.3% by weight of said aqueous solution.

1 **30.** A pre-cast polyacrylamide slab gel in accordance with claim **18** in
2 which said plates are glass.

1 **31.** A pre-cast polyacrylamide slab gel in accordance with claim **18** in
2 which said plates are plastic.

1 **32.** A pre-cast polyacrylamide slab gel in accordance with claim **31** in
2 which said plastic is a member selected from the group consisting of polycarbonate,
3 polystyrene, acrylic polymers, styrene-acrylonitrile copolymer, acrylonitrile polymers,
4 poly(ethylene terephthalate), poly(ethylene terephthalate glycolate), and poly(ethylene
5 naphthalenedicarboxylate).

1 **33.** A pre-cast polyacrylamide slab gel in accordance with claim **31** in
2 which said plastic is a polystyrene-acrylonitrile blend.